

MIRROR AND IMAGE DISPLAY SYSTEM

BACKGROUND OF THE INVENTION

It is known to marketers that cosmetics are more readily purchased if they can be tested and sampled by customers. Because make-up items are typically nonexchangeable, consumers find it helpful to use the make-up and see it as applied before they purchase the product. For that very purpose, sample cosmetics labeled "testers" are often seen at cosmetics counters. Hence, as a marketing ploy, as well as a convenience to shoppers, cosmetics counters almost always provide a table-top vanity mirror.

As a further marketing ploy for cosmetics (if not all consumer items), informational commercials and promotional segments are often played within view of sales counters, or sometimes directly on the sales counters. VCR's and other comparable electronic equipment are used effectively in this capacity, as a relatively nonintrusive means to educate and entertain the shopper. A shopper may choose to watch the infomercials or video segments and do so without disturbing others. In this regard, an undecided shopper may well commit to a purchase once the shopper understands how the product is used or becomes informed on the benefits of the product.

Many retail establishments in promoting cosmetics also conduct in-store, live demonstrations by make-up artists who work directly with willing participants. The interactive nature of such demonstrations is invaluable in terms of enabling shoppers to simultaneously experiment with the products demonstrated and seek the advice of professionals. In this regard, a shopper may be more inclined to purchase a product once she knows which product best suits her needs and desires.

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The aforementioned tactics work best when employed in combination with each other. However, the ability to combine these tactics with each other or with other marketing ploys may be hampered due to space and time constraints. Counter space and floor space in retail establishments are often limited. Moreover, time is of the essence in terms of capturing a shopper's attention. Furthermore, many finer retail establishments follow strict guidelines on maintaining their premises clean and orderly. Cluttered countertops and floor space pose a eye-sore for shoppers, if not also a safety hazard for shoppers and employees alike. Consequently, there is a desire to combine the foregoing marketing ploys in a manner that is both aesthetically pleasing and functionally efficient in terms of space and time.

SUMMARY OF THE INVENTION

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The present invention is directed to a vanity console display system, comprising a vanity console, a variety of video image sources capable of providing different images, and a control unit. The vanity console has a mirror, an image display and a touch screen positioned on the mirror for use with the image display. The mirror has reflective and transmissive properties and the image display is positioned relative to the mirror such that is it hidden by the mirror and unseen to the user unless activated to provide an image that is transmitted through the mirror to the user. The control unit is connected to the various video image sources and is configured to receive user input signals from the touch screen for selecting and controlling the video image sources. As such, the transmitted image seen by the user may be varied as desired and selected by the user through the use of the touch screen.

1 The video image source may be a video cassette player or a
digital video disc player for entertaining, informing or
educating the user, or even a face or body scanner such that
5 "before and after" make-up tests may be conducted. The system
may also include a printer or a projector responsive to the user
input signals to print or project images from the video image
sources. The system may further provide illumination devices so
as to simulate "day-time" lighting or "night-time" lighting to
10 assist the user in applying make-up.

15 The system may yet further be adapted to enable the
application of cosmetics virtually, by providing a processor
within the control unit to process the video image signals of a
scanned body part, such as eyes, lips or even hands. The system
may be rendered as interactive as desired by the user through the
touch screen.

20 These, as well as other features of the invention, will
become apparent from the detailed description which follows,
considered together with the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

25 In the drawings, which constitute a part of this
specification, exemplary embodiments demonstrating various
features of the invention are set forth as follows:

30 FIGURE 1 is a perspective plan view of an embodiment of a
mirror and image display system of the instant invention;

35 FIGURES 2A is side elevational view of an embodiment of a
vanity console of the present invention (without a touch screen
or a front frame member);

1 FIGURE 2B is back elevational view of an embodiment of a vanity console of the present invention;

5 FIGURE 2C is an exploded perspective view of an embodiment of a vanity console of the present invention; and

10 FIGURE 3 is a block electrical circuit diagram showing the electrical circuit employed for an embodiment of the system of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

15 Referring to FIG. 1, the present invention is directed to a mirror and image display system 10 for use on counters, tables and the like. It may be used with cosmetics sales counters, jewelry sales counters, or with any sales counters which may benefit from a customer being able to see a reflection of his or her face or a body part. The system may also have use and application in a noncommercial setting, such as by individuals in a personal or private setting.

20 In a preferred embodiment of the invention, the system 10 includes a vanity console 12 having a mirror 14 and an image display 16 positioned behind the mirror and therefore hidden from a user unless activated to transmit images. To that end, the image display is adapted to receive video image signals and to work in conjunction with a touch screen 18 that is positioned on the mirror. The system further has a control unit 20 which is adaptable to provide many functions, and a plurality of video image sources 24 to output the video image signals to the image display 16.

25 Referring to FIGS. 2A-2C, the vanity console 12 includes a stainless steel housing 26 comprising a plate member 27 and a back frame member 29 which together provide a cavity 28

1 therebetween in which the image display 16 is situated. The
plate member 27 is configured with an opening 30 which receives
the screen of the image display 16, and the image display 16 may
5 be configured with a flange 32 by which the image display 16 is
mounted onto the plate member 27 by screws 37, or the like. The
plate member 27 is affixed to the back frame member 29 by screws
39, or the like. Also, situated in the cavity is an audio
speaker 25 connected and configured within the system to transmit
10 to the user any audio component from the video image sources.
To that end, audio apertures 34 are provided in the plate member
27. Ventilation slots 44 are also provided.

15 The mirror 14, in turn, is mounted on to the plate member
27 by fasteners, for example, Velcro® tabs 31. The touch screen
18 is positioned on the mirror's outer surface so that the touch
screen 18 may be accessed by a user. The touch screen 18 is
transparent so that the video image on the image display 16 is
visible through it. The touch screen may be, for example, a
20 glass panel which is configured and shaped to correspond to the
shape of the image display's screen. One type of touch screen
is fitted with a number of relatively short spaced-apart linear
electrodes extending along the perimeter of the touch screen.

25 An open front frame member 33 may be positioned outside of
the touch screen 18 to secure and protect the touch screen 18.
The front frame member 33 may be configured such that it readily
snaps onto outer edge of the mirror 14 and plate member 27.
Electrical connections for the touch screen 18 may be
30 aesthetically routed within the front frame member 33. Moreover,
the plate member 27 may be configured with aperture(s) to allow
such electrical connections to be routed into the cavity 28 of
the housing 26.

35 Supporting the housing 26 are a base 40 and a support arm
42 which also may be of stainless steel. The housing may be

1 rigidly mounted on the support arm 42, or fasteners, such as pins
and brackets may be used so that the housing is pivotable. The
support arm 42 is of a hollow construction such that electrical
connections or couplings to and from the vanity console 12 can
5 be accomplished without being visible to the user of the present
invention.

10 The mirror 14 has reflective characteristics such that its
entire useable surface can be reflective to the user, for
example, for applying make-up. However, the mirror also has
transmissive characteristics such that when and where the image
display 16 is activated to display an image, the image is
transmitted and therefore visible to the user through the mirror
14. For purposes of describing the invention hereinafter, the
15 mirror will be described as having a "reflected" image portion
(or area) defined by the mirror's surface, and a "transmitted"
image portion (or area) defined by the screen of the image
display 16, even though it is understood that the mirror has
substantially both reflective and transmissive characteristics
20 throughout its surface.

25 In view of the foregoing, the mirror 14 has a reflected
image portion 52 no greater than the entire useable mirror
surface, and a transmitted image portion 50 lesser than the
entire useable mirror surface defined by the screen of the image
display 16 when operating. The touch screen 18 is positioned on
the mirror 14 for use with the image display. As such, the user
uses the system 10 by directing or "communicating" with the
control unit via the touch screen. Such a function is to enable
30 the user to select the image shown on the image display 16.

35 Any desired number of touch fields (or soft switches) 60 is
provided by the touch screen 18. The touch fields 60 may include
a variety of commands for operating the system 10, including

1 commands to selectively control and actuate the video image
sources 24.

5 The image display 16 can be a commercially available monitor
equipped with a built-in light source suitable adopted to achieve
and perform the video display function according to the
invention. Alternatively, the image display can be a
conventional flat screen color LCD type monitor. In any case,
10 it is preferred that the display screen be of a suitable size
relative to the size of the mirror such that the remaining
reflected image portion of the mirror while the video image is
being transmitted provides a suitable area of reflection for the
user. For example, the display screen may be of a relative one-
15 half to one-quarter the area of the mirror, such that the
transmitted video image occupies one-half to one-quarter of the
area of the mirror.

20 The base 40 of the vanity console may also provide other
user input devices additional to the touch screen, such as
selector switches 62. The switches 62 function comparably to the
touch screen in terms of enabling the user to use the system 10.
Like or in addition to the touch screen fields 60, the switches
62 may be video source selector switches or they may actuate
25 other electrical components of the system 10.

30 In accordance with the present invention, at least certain
of the touch screen fields 60 and the selector switches 62 are
configured to enable the user to select the source of the video
signals provided to the image display 16. In the context of the
touch screen fields 60, the user at the prompting of suitable
graphics or images on the image display 16, as controlled by the
control unit 20, touches the field which corresponds to the video
image source 24 she wishes to select. Referring again to FIGURE
35 1, the video image sources 24 may include prerecorded and/or live
video signal sources. Such video signal sources may be, for

1 example, a color face/body scanner 70 and a digital camera 72 for
providing prerecorded video signals of still images, a video
cassette player 74 and a digital video disc player 76 for
5 providing prerecorded video signals of dynamic images, and a
video camera 78 for capturing and/or providing live, real-time
video signals of still or dynamic images. Whereas the entire
useable surface area of the mirror 14 is reflective to the user
when the image display 16 is inactive or not actuated, the mirror
10 14 is transmissive in the region of the screen of image display
16 once the image display is operating or actuated.

15 The provision of prerecorded video images and live video
images enables the system to flexibly accommodate the desires and
needs of the user. Indeed, the possible uses and applications
of the system depend in part on the imagination of the user. For
example, the user may be educated, informed or entertained by the
transmitted images in accordance with the user's selection of the
various video image sources 24. Or, the user can conduct a
20 "before and after" session to compare images of herself with and
without cosmetics. By using the digital camera 72 or the scanner
70, the user first captures or scans in a "before" image of her
face (or any other suitable body part). Thereafter, having
applied the cosmetics, e.g., lipstick or nail polish, the user
25 can compare the made-up body part (or "after" image) with her
"before" image. In particular, by selecting the appropriate touch
field(s) 60 for the system to display the "before" image on the
image display 16, the user can look at the mirror and
simultaneously see the transmitted "before" image along with the
30 reflected "after" image.

35 Furthermore, the user by selecting the video player 74 or
76 as the selected video image source is able to experience and
view through the transmitted image portion 52 of the mirror 14
a prerecorded video instructing on make-up application
techniques. Or, the user by selecting the video camera 78 as the

1 video image source can experience and view through the
transmitted image portion 52 of the mirror a live demonstration,
e.g., on make-up removal techniques, held at a remote locate that
5 is captured by the video camera. The system 10 may even be
adapted to process or alter the video signals so that cosmetics
may be applied virtually, as explained in detail further below.

10 In the context of processing video signals, the system 10
can be adapted to allow the user to experiment with cosmetics
virtually. To that end, the scanner 70 or the digital camera 72
of the system provides the system with video signals
representative of the user's face or body. The user then selects
via the touch screen a particular alteration, that is, a
15 particular "cosmetics" to be applied virtually. As understood
by one of ordinary skill in the art, the control unit 20 may
include a processor adapted to process the video signals in
accordance with the selection made by the user. For example,
where the user's face is captured or scanned in and the user
wishes to sample a shade of lipstick, the processor "applies" the
20 selected shade of lipstick to the video image. In accordance
with the selected virtual lipstick made by the user via the touch
screen 18, the processor processes the video signals to generate
an altered image bearing the selected shade of lipstick
substantially in the region of user's lips in the video image.
25 The processed video signals are then outputted from the processor
to the image display which then displays the altered image to the
user as a transmitted image through the mirror. In this manner,
the user may experiment virtually with different lipstick shades,
30 or any suitable cosmetics, without having to actually apply the
cosmetics to the user's face or body.

35 The system is also configured to enable the user to activate
other electrical components, such as special showcase
illumination around the mirror, a printer 92 and/or a projector
94. The selector switches 62 on the base 40 of the vanity

1 console 12 may be used to activate these components. The showcase
illumination may include lighting elements 90 to generate
illumination comparable to "daytime" lighting. The switch 62a
5 may actuate additional lighting elements 91 or modify the
intensity and/or shade of the lighting elements 90 to provide
illumination comparable to "nighttime" lighting. Electrical
connections may again be aesthetically routed within the front
frame member 33.

10 Furthermore, switch 62b may be configured to activate and
control the printer 92 to print an image captured or scanned into
the system 10 and/or shown on the image display 16. The printer
92 may also be used to print other information such as
15 preprogrammed information on the purchase of cosmetics products.

Moreover, switch 62c may be configured to activate and
control the projector 94 for displaying to an audience on a large
screen any image(s) including any captured or scanned image or
preprogrammed image whether such image(s) are displayed on the
20 image display 16 at the vanity console 12. The projector 94 may
be a film projector, a slide projector, or any other projection
device suitable for use with an audience. It is understood by
one of ordinary skill in the art that the functions performed by
the switches 62 may be incorporated completely or partially into
25 the touch fields 60 of the touch screen 18.

Referring to FIG. 3, a block electrical circuit diagram of
the system 10. The touch screen 18 and image display 16 are
30 shown in combination as a touch screen display 100 as understood
by those of ordinary skill in the art. The touch screen display
100 is coupled to the control unit 20 via a touch screen
interface 102 which receives user input signals via connection
104 and relays the user input signals to the control unit 20 via
35 connection 106. The control unit 20, also referred to as a
microcontroller subsystem 108 communicates with the plurality of

1 video image sources 24, such as, the digital camera 72 via
connection 110, with the scanner 70 via connection 112, with the
video player 76 via connection 114, with the video player 74 via
5 connection 116 and any other video image source including the
video camera recorder 78 via connection 118.

10 Upon receiving the user input signals through the interface
102, the microcontroller 108 is adapted to activate and control
any selected of the video image sources 24 and to receive the
output video image signals therefrom. The microcontroller 108
communicates, controls and receives output video image signals
15 from the digital camera via the connection 110 and the scanner
via the connection 112. The system 10 provides a switch 120 for
receiving output video image signals from the player 76 via
connection 122, from the player 74 via connection 124 and from
any other video image source 78 via connection 126. The switch
120 relays these output image signals to the microcontroller 108
via connection 128.

20 In receipt of the output image signals, the microcontroller
108 sends the signals to the touch screen interface 102 via
connection 130 which then sends the signals to the touch screen
display 100 via connection 132. Any audio signals from the DVD
25 76, VCR 74 or other image source 78 are also sent along
connections 122, 124, 126 and 128.

30 As understood by one of ordinary skill in the art, the
microcontroller 108 is configured and adapted to control the
graphics or touch fields 60 displayed on the image display 16 for
use with the touch screen 18. Moreover, if the output image
signals are to be processed, as mentioned above for applying
cosmetics virtually, the microcontroller subsystem 108 is
35 configured to perform such processing on the signals and in turn
output such altered or processed image signals to the touch
screen display 100. The microcontroller subsystem 100 is

1 programmed so that when the user touches a given field 60, the
system 10 responds accordingly. To use the present system, the
user touches the fields 60 which correspond to the video image
5 source he wishes to select. The touch screen senses each touch
and generates the corresponding user input signal which
identifies the field.

The audio signals from the DVD 76, VCR 74 or other image
source 78 are also processed by the microcontroller subsystem 108
10 and sent to the speaker 25 along connection 144.

The microcontroller subsystem is further adapted to activate
and control the switch selectors 62 for illuminating the lights
90 via connections 134, 136 and 138. It is also adapted to
15 activate and control the printer 92 via connection 140 and the
projector 94 via connection 142. In this regard, the
microcontroller subsystem 108 is configured to output to the
printer 92 or the projector 94 image signals from any of the
video image sources 24 or any image signals stored in the
20 microcontroller subsystem 108, such as promotional or purchase
information and materials.

It may be seen that the system of the present invention may
be readily incorporated in various embodiments to provide a
mirror and image display system. In one embodiment, the system
25 comprises merely the vanity console 12 and a video image source,
such as the VCR. As such, the output (video and any audio
signals) of the VCR is fed directly to the image display 16.
Upon activation of the VCR, the image display 16, otherwise
30 hidden behind the mirror 14, is also activated to display
image(s) in accordance with the VCR output, where such image(s)
are viewed by the user through the mirror 14.

Moreover, in another embodiment of the system, the touch
35 screen 18 (with or without the frame 33) may be replaced by or
used along with other user input devices, such as

1 detection/transducer devices 35 (see FIG. 2C), for receiving
commands or input instructions from the user. The devices 35,
which can be infrared or proximity sensors, can be positioned on
5 the plate 27, behind the mirror 14, and be adapted to sense heat
from the user's fingers through the mirror 14. To that end, the
mirror 14 can be etched, or otherwise marked, so as to indicate
to the user the location of the sensors 35 behind the mirror, or
illumination devices can be mounted on the plate 27 for that same
10 purpose. Alternatively, the devices 35 can also be positioned
on the mirror 14. For either embodiment, the devices 35 may be
electrically connected and configured for operation within the
system comparably to the selector switches 62, as illustrated in
FIG. 3.

15 It is understood by one of ordinary skill in the art that
the various components described hereinabove may assume different
configurations all accomplishing the same desirable result. It
is also understood by one of ordinary skill in the art that the
20 configurations and dimensions of various components may be
altered and modified as desirable. In that regard, various
alternative techniques and configurations may be employed departing
from those disclosed and suggested herein.

25 Consequently, it is to be understood that the scope hereof
should be determined in accordance with the claims as set forth
below.